



Application No. 10/810,645  
Reply to Office Action of May 19, 2005

Amendments to and Listing of the Claims:

This listing of claims replaces all prior versions, and listings, of claims in this application.

Listing of Claims:

1. (Original) A system for measuring electrostatic discharge (ESD) characteristics of a semiconductor device, comprising:
  - at least one pulse generator generating ESD-scale pulses;
  - a first point of the semiconductor device receiving a first ESD-scale pulse from the at least one pulse generator;
  - a second point of the semiconductor device receiving the first ESD-scale pulse from the at least one pulse generator;
  - at least a third point of the semiconductor device receiving a second ESD-scale pulse from the at least one pulse generator;
  - and a data collector to collect data on the ESD characteristics of the semiconductor device.
2. (Original) The system of claim 1, wherein the semiconductor device includes one of a metal-oxide-semiconductor (MOS) transistor, a silicon-controlled rectifier (SCR), a low voltage triggered SCR (LVTSCR), a field oxide device (FOD) and a bipolar junction transistor (BJT).
3. (Original) The system of claim 1, wherein the at least one pulse generator includes a transmission line pulse (TLP) generator to generate the ESD-scale pulses.
4. (Original) The system of claim 1, wherein the at least one pulse generator includes a transmission line pulse (TLP) generator to generate the first ESD-scale pulse.
5. (Original) The system of claim 1, wherein the at least one pulse generator includes a biasing source to generate the second ESD-scale pulse.

6. (Original) The system of claim 2, wherein the MOS transistor includes a source and a drain to receive the first ESD-scale pulse, and at least one of a gate and a substrate to receive the second ESD-scale pulse.

7. (Original) The system of claim 2, wherein one of the SCR and LVTSCR includes an anode and a cathode to receive the first ESD-scale pulses, and at least one of a substrate and a semiconductor well region to receive the second ESD-scale pulse.

8. (Original) The system of claim 2, wherein the LVTSCR includes a gate to receive the second ESD-scale pulse.

9. (Original) The system of claim 2, wherein one of the FOD and BJT includes an emitter and a collector to receive the first ESD-scale pulses, and a base to receive the second ESD-scale pulse.

10. (Original) The system of claim 1, further comprising a detector to detect a leakage current in the semiconductor device.

11. (Original) The system of claim 1, further comprising a switching device coupled to the at least one pulse generator and the detector to switch a connection between the at least one pulse generator and the detector.

12. (Original) A system for measuring electrostatic discharge (ESD) characteristics of a multi-terminal device, comprising:

    a first pulse generator providing a first ESD-scale pulse;

    a second pulse generator providing a second ESD-scale pulse;

    a first terminal of the multi-terminal device coupled to the first pulse generator to receive the first ESD-scale pulse;

    a second terminal of the multi-terminal device coupled to the first pulse generator to receive the first ESD-scale pulse;

    a third terminal of the multi-terminal device coupled to the second pulse generator to

receive the second ESD-scale pulse; and

a detector to detect a leakage current of the multi-terminal semiconductor device, wherein the ESD characteristics of the multi-terminal device are determined when the detector detects a leakage current in the multi-terminal device.

13. (Original) The system of claim 12, wherein the first and second pulse generators include a transmission line pulse (TLP) generator generating the first and second ESD-scale pulses.

14. (Original) The system of claim 12, wherein the first pulse generator includes a TLP generator generating the first ESD-scale pulse.

15. (Original) The system of claim 12, wherein the second pulse generator includes a biasing source generating the second ESD-scale pulse.

16. (Original) The system of claim 12, further comprising a switching device coupled to the first and second pulse generators and the detector to switch a connection to the multi-terminal device between the first and second pulse generators and the detector.

17. (Original) The system of claim 12, wherein the multi-terminal device includes one of a metal-oxide-semiconductor (MOS) transistor, a silicon-controlled rectifier (SCR), a low voltage triggered SCR (LVTSCR), a field oxide device (FOD) and a bipolar junction transistor (BJT).

18. (Original) A method of measuring electrostatic discharge (ESD) characteristics of a semiconductor device, comprising:

- providing at least one pulse generator generating ESD-scale signals;
- identifying a first point on the semiconductor device;
- identifying a second point on the semiconductor device;
- identifying a third point on the semiconductor device;
- providing a first ESD-scale signal to the first and second points of the semiconductor device; and

providing a second ESD-scale signal to at least the third point on the semiconductor device.

19. (Original) The method of claim 18, further comprising the step of providing a transmission line pulse (TLP) generator to generate the first and second ESD-scale signals.

20. (Original) The method of claim 18, further comprising the step of providing a TLP generator to generate the first ESD-scale signal.

21. (Original) The method of claim 18, further comprising the step of providing a biasing source to generate the second ESD-scale signal.

22. (Original) The method of claim 18, further comprising the step of providing one of a metal-oxide-semiconductor (MOS) transistor, a silicon-controlled rectifier (SCR), a low voltage triggered SCR (LVTSCR), a field oxide device (FOD) and a bipolar junction transistor (BJT) to serve as the semiconductor device.

23. (Original) The method of claim 22, further comprising the step of providing the first ESD-scale signal to a source and a drain of the MOS transistor, and providing the second ESD-scale signal to at least one of a gate and a substrate of the MOS transistor.

24. (Original) The method of claim 22, further comprising the step of providing the first ESD-scale signal to an anode and a cathode of the SCR, and providing the second ESD-scale signal to at least one of a substrate and a semiconductor well region of the SCR.

25. (Original) The method of claim 22, further comprising the step of providing the first ESD-scale signal to an anode and a cathode of the LVTSCR, and providing the second ESD-scale signal to at least one of a substrate and a semiconductor well region of the LVTSCR.

26. (Original) The method of claim 22, further comprising the step of providing the first ESD-

scale signal to an emitter and a collector of the FOD, and providing the second ESD-scale signal to a base of the FOD.

27. (Original) The method of claim 22, further comprising the step of providing the first ESD-scale signal to an emitter and a collector of the BJT, and providing the second ESD-scale signal to a base of the BJT.

28. (Original) The method of claim 18, further comprising the step of providing a data collector to collect data regarding the ESD characteristics of the semiconductor device.

29. (Original) The method of claim 18, further comprising the step of providing a detector to detect a leakage current in the semiconductor device.

30. (Original) The method of claim 18, further comprising the step of providing a switching device coupled to the at least one pulse generator and the detector to switch a connection to the semiconductor device between the at least one pulse generator and the detector.

31. (Currently Amended) A method of electrostatic discharge (ESD) testing, comprising:  
    providing a multi-terminal semiconductor device;  
    generating at least one two ESD-scale pulses;  
    providing a first ESD-scale pulse of the at least one two ESD-scale pulses to a first and a second terminals terminal of the multi-terminal device;  
    providing a second ESD-scale pulse of the at least one two ESD-scale pulses to at least the second terminal and a third terminal of the multi-terminal device;  
    collecting ESD characteristics of the multi-terminal device under the first and second ESD-scale pulses; and  
    detecting if a leakage current flows in the multi-terminal semiconductor device.

32. (Original) The method of claim 31, further comprising the step of providing one of a metal-oxide-semiconductor (MOS) transistor, a silicon-controlled rectifier (SCR), a low voltage triggered SCR (LVTSCR), a field oxide device (FOD) and a bipolar junction transistor (BJT) to

serve as the multi-terminal device.

33. (Original) The method of claim 31, further comprising the step of providing the second ESD-scale pulse to the at least one third terminal before providing the first ESD-scale pulse to the first and second terminals.

34. (Original) The method of claim 31, further comprising the step of detecting whether a leakage current flows in the multi-terminal device before providing the first and second ESD-scale pulses.

35. (Original) The method of claim 34, further comprising generating the first and second ESD-scale pulses by a transmission line pulse (TLP) generator.